DOCUMENT RESUME

ED 275 444 PS 016 158

AUTHOR Lamb, Michael E.
TITLE A Comparison of "Second Order Effects" Involving Parents and Siblings.
PUB DATE 85
NOTE 8p.; In: Research and Clinical Center for Child Development Annual Report, 1984-1985; see PS 016 157.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Fathers; Infant Behavior; *Infants; *Interpersonal Relationship; *Mothers; *Parent Child Relationship; *Siblings
IDENTIFIERS Second Order Effects

ABSTRACT

To determine whether the presence of a fourth person affects triads in the same way that the presence of a third person affects dyads, data from two previous studies were reanalyzed. In the original studies a total of 60 infants 12 months of age were observed interacting with their parents in 4 social contexts: 1 parent present, 2 parents present, 1 parent and preschool-aged sibling present, and 2 parents and sibling present. Analyses revealed that (1) infants directed fewer behaviors to either parent when both were present than when only one was present; (2) infants directed fewer behaviors to either parent when the sibling was present than when she or he was absent; (3) a sibling's presence did not inhibit the infants' behavior as much as a parent's presence did; (4) the presence of the other parent or the sibling led parents to vocalize to their infants less; (5) the sibling's presence inhibited the parent's behavior less than the other parent's presence; and (6) the presence of a fourth person did not inhibit interaction significantly more than the presence of a third person. (Author/RH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

A COMPARISON OF "SECOND ORDER EFFECTS" INVOLVING PARENTS AND SIBLINGS

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Michael E. Lamb
University of Utah

ED275444
PS 016158.

Sixty twelve-month-old infants were observed interacting with their parents in four social contexts : One parent present, two parents present, one parent and preschool-aged sibling present, and two parents and sibling present. Analyses revealed : a) that infants directed fewer behaviors to either parent when both were present than when only one was present ; b) that infants directed fewer behaviors to either parent when the sibling was present than when s/he was absent ; c) that a sibling's presence did not inhibit the infants' behavior as much as a parent's presence did ; d) that the presence of the other parent or the sibling led parents to vocalize to their infants less ; e) that the sibling's presence inhibited the parent's behavior less than the other parent's presence ; and f) that the presence of a fourth person did not inhibit interaction significantly more than the presence of a third person.

A COMPARISON OF "SECOND ORDER EFFECTS" INVOLVING PARENTS AND SIBLINGS

Motivated by Bronfenbrenner's (1976, 1979) appeal for researchers to explore "second order effects" in social science, there have been several published reports concerning the impact of a third person's presence on interaction within a dyad (see Lamb, 1979, for a review). The results of these studies have been remarkably consistent. Parents and infants interact more when the dyad is alone than when the other parent is also present (Clarke-Stewart, 1978 ; Lamb, 1976a, 1976b, 1977a, 1978b ; Pedersen, Anderson, & Cain, 1980). Analogously, Rosenblatt (1974) found that interaction within the mother-father dyad was inhibited by the presence of their child. The present study was designed to explore second-order effects in family groups comprising not only mothers, fathers and infants, but young siblings as well. We wished to determine whether the presence of a sibling inhibited the parent-infant dyad in the same way as the presence of the other parent/spouse did, and whether the sibling's presence modulated the effect of the second parent's presence on parent-infant interaction. In addition, we wanted to determine whether the presence of a fourth person affects triads in the same way that the presence of a third person affects dyads. To address these questions, we reanalyzed data from two previous studies (Lamb, 1978a, 1978b). The potential importance of such research has been described by Lamb (1979), who pointed out that an understanding of the effects of the social context on dyadic social interaction was a prerequisite to understanding the formative significance of social interaction.

Hildy Feen, Cindy Neff, Lisa Heidelberger and Steve Neren assisted in the collection of the data. Correspondence and reprints requests should be addressed to Michael E. Lamb, Department of Psychology, The University of Utah, Salt Lake City, Utah 84112, USA.

Editor's note : As a visiting professor of the Japanese Ministry of Education, Science and Culture, Dr. Lamb stayed for two months in 1985 at the RCCCD, working with Professor Miyake and his collaborators and giving a series of lectures, and seminars.

BEST COPY AVAILABLE

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Kazuo Miyake
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

METHOD

Subjects

Sixty 12-month-old infants and their families participated in this research. Thirty-six of the infants were observed with their mothers and fathers (Lamb, 1978b), and twenty-four were observed with their mothers, fathers and preschool-aged siblings (Lamb, 1978a). The siblings ranged in age from 30 months to 58 months, with a mean of 41 months and a median of 43 months. The samples were composed of equal numbers of male and female infants and siblings. Families were recruited from birth announcements published in the local newspaper ; 44% of the families contacted agreed to participate. Three-quarters of the fathers had upper or upper-middle class occupations (Hollingshead, Note 1). This over-representation of high social status families reflects the demographic characteristics of the University town in which this research was conducted.

Procedure

The mother-father-infant triads and the mother-father-sibling-infant groups were observed in a 6m x 7.5m laboratory playroom, equipped with ceiling-mounted microphones and one-way observation windows along one wall. The playroom contained two chairs for the parents (2.1m apart), a couch, a table, and 26 toys, laid out in standard locations around the room. One toy was 1.2m from both parents ; all other items were at least 2m away.

The infants or sibling-infant dyads were observed in three contexts : once with just mother (M) present (8 minutes), once with father (F) present (8 minutes), and once with both parents (MF) present (8 minutes). The three episodes were combined in all possible sequences, with equal numbers of male and female infants, and near-equal representation of all sex of sibling by sex of infant permutations within each sequence. There were 6 episode sequence permutations (M, F, MF ; M, MF, F ; MF, M, F ; MF, F, M ; F, M, MF ; F, MF, M). Six mother-father-infant triads and four mother-father-sibling-infant groups were observed under each procedure. The parents were instructed to be responsive but to refrain from initiating interaction with either of the children. They were encouraged to chat to their spouses normally when in the room together.

From behind the one-way observation windows, an observer recorded the infant-parent interaction while an associate filmed a videotape record of the interaction. Consequently, observer reliability could be monitored throughout the study. The observer used a modified event recorder which produced an audiotaped signal for subsequent computerized transcription (Stephenson, Smith, & Roberts, 1975). S/he recorded the behavior directed by the infants to their parents using the observational categories defined by Lamb (1976b). Five affiliative behaviors (smile, vocalize, look, laugh, proffer) and five attachment behaviors (proximity, touch, approach, ask to be held, fuss) were recorded, as was the occurrence of adult vocalization to the child. Observers also noted when the adults vocalized to the siblings. In a pilot study involving 12 families, we found that parental vocalization was the most reliably recorded measure of the parents' involvement in interaction and that scores on this measure were highly correlated with other indices (e. g., offering toys, smiling). Proximity and touch were duration measures (representing the number of seconds over which the state extended) since the observers recorded both the initiation and termination of these states. All other measures were frequency counts, scored once each time the behavior occurred.

Reliability

One of three observers conducted each of the observations. All three had experience observing infants and young children. During the course of the study, observer reliability was repeatedly assessed by requiring an observer to rescore from videotape the behavior of a child previously observed by another observer. A total of 23 reliability assessments were made. Coefficients of inter-observer agreement -computed in the manner described by Eckerman, Whatley, and Kutz (1975) and Lamb (1976b, 1977a)- ranged from .62 (infant vocalize), to .94 (ask to be held), with a mean of .78 and a median of .77. With one exception, all coefficients were above .70. Reliability was equivalently high in the dyadic, triadic, and four-person situations.

RESULTS

Infant behavior toward parents

An initial multivariate analysis of variance (MANOVA) revealed no significant differences in infant behavior related to infant sex, sex of sibling, or sex of parent. Consequently, the data were combined across the levels of these factors for subsequent analyses.

The mean frequencies of occurrence of the attachment and affiliative behaviors in the four conditions are presented in table 1. Inspection of the data reveals that there was a decline in the amount of interaction with each parent as the number of individuals in the room increased. Multivariate analyses revealed that, irrespective of the presence or absence of a sibling, the entrance of a second parent significantly reduced the frequency of

TABLE 1

Mean Frequencies of Attachment and Affiliative Behaviors to Parents in Various Social Contexts

Significant Situation-Related Differences

Behavior	One Parent only (1)	Difference between (1) and (3) (2)	Two Parents only (3)	Difference between (3) and (5) (4)	One Parent and Sibling (5)	Difference between (5) and (7) (6)	Two Parents and Sibling (7)	Difference between (1) and (5) (8)	Difference between (3) and (7) (9)
Smile	1.92		1.87		2.30		2.44		
Vocalize	3.71	*	2.48		3.18		2.48		
Look	9.95	* * *	6.75	+	8.26	+	6.88	+	
Laugh	0.05		0.17		0.38		0.66	*	
Proffer	1.79	*	0.99		0.48		0.38	* *	+
Proximity	138.50	* *	75.60		81.02	+	47.30	* *	+
Approach	2.48	*	1.64		1.76		1.48	+	
Touch	38.98		22.74		9.96		6.94	* *	
Seek to be held	0.32		0.28		0.20		0.10		
Fuss	0.31		0.32		0.70		0.20		
Multivariate comparison		* * * *		*		n.s.		* * *	n.s.

Note: All figures reflect mean frequencies per parent.

* * * * $p < .0001$ * $p < .05$

* * * $p < .001$ + $p < .10$

* * $p < .01$

social behavior directed by infants to their parents ($p<.0001$). Significant effects were evident on five of the ten univariate analyses (vocalize, $p<.025$; look, $p<.0001$; proffer, $p<.04$; proximity, $p<.0003$, approach, $p<.025$). All other measures except smile (no change) and laugh (increase) showed nonsignificant changes in the same direction.

Similarly, irrespective of the number of parents present, the presence of a sibling led to a decrease in the occurrence of infant behaviors ($p<.0001$). Univariate tests showed declines in the frequency of proffering, $p<.0003$, proximity, $p<.0025$, touch, $p<.0025$, and approach, $p<.11$. There were non-significant declines in the occurrences of vocalize, look, and seek to be held. On the other hand, there were increases in the frequency of laugh, $p<.07$, fuss, n. s., and smile, n. s.. Multivariate and univariate analyses revealed no statistical interactions between the siblingpresence and parent-presence factors.

Subsequent multivariate analyses were computed in order to compare the frequency of infant behavior in the dyadic, triadic, and four-person situations. The analyses indicated significantly lower levels of parentdirected infant behavior in both of the triadic situations (Mother-Father-Infant, $p<.0001$; Either Parent-Sibling-Infant, $p<.0003$) than in the dyadic setting (Either Parent-Infant). The results of the relevant univariate tests are presented in columns 2 and 8 of table 1. However, inspection of columns 6 and 9 reveals that the frequency of infant social behavior was not significantly lower in the four-person situation (Mother-Father-Silbing-Infant) than in either of the triadic settings (multivariate p 's$>.65$). A comparison of the two triadic contexts (see columns 3, 4, 5 of table 1) indicated that infants interacted significantly less with each parent in the Mother-Father-Infant setting than in the Either Parent-Sibling-Infant setting ($p<.04$) although only one univariate test revealed a marginal effect.

Parental Behavior

The data provided in table 2 suggest that the behavior of the parents was affected dramatically by the siblings' presence. Parents vocalized far less to the infants when the siblings were present than in either the one-or two-parent situation. Most of the parents' attention was directed to the preschooler when s/he was present. However, there were only a chance number of significant correlations between the vocal activity of the parents, and the frequency of attachment and affiliative behaviors directed to them by the infants. Likewise, although one might predict negative correlations between the number of parental vocalizations directed to the preschoolers, and the amount of social behavior directed by

TABLE 2

Mean Frequencies of Parent Vocalization per Episode

	To Infant (No sibling present)	To Infant (Sibling present)	To Preschooler (Infant present)
One parent present	19.1a	3.3b	19.6a
Two parents present	7.2c	2.3d	9.4c

Mothers and fathers behaved similarly, and the entries represent the mean values for mothers and fathers. Entries not sharing the same subscript differ from one another on two-tailed dependent t-tests at $p < .01$ level or better.

infants to parents, only a chance number of these correlations were significant. Consequently, the data do not indicate that the effects on the infants' behavior were mediated via an effect of the siblings' presence on the parents.

The results described in the preceding section were unchanged when all the analyses were recomputed using the frequency of adult vocalization to the infant as a covariate.

DISCUSSION

These results replicate earlier findings concerning the effect of a third person's presence on interaction within parent-infant and parent-parent dyads, and demonstrate that these second-order effects occur whether the third person is a parent (Clarke-Stewart, 1978 ; Lamb, 1976a, 1977a, 1978b ; this study), a child (Rosenblatt, 1974), a stranger (Lamb, 1977a), or a sibling (this study). The data showed that the presence of a sibling had an effect that was qualitatively similar to though quantitatively less than the impact of a parent's presence. In both cases, the number of affiliative and attachment behaviors directed by infants to parents declined significantly. By contrast, the entrance of a stranger causes an inhibition of affiliative behavior, but produces an increase in the occurrence of attachment behavior (Lamb, 1977a). It thus appears that the infant's behavior is affected not only by the presence of additional potential interactants, but by the identity of those persons as well.

It is clearly of interest to determine why these effects occur. Other research (e. g., Lamb, 1978a) indicates that infants under 18 months of age engage in very little direct interaction with siblings when observed in the laboratory. Furthermore, there is no correlation between the number of social behaviors directed by infants to their siblings, and the frequency of infant-directed behavior on the part of the siblings (Lamb, 1978a).

Presumably, then, the reduction in the amount of attention paid by infants to their parents when siblings are present does not occur because the infants are preoccupied with their siblings. Instead, the siblings may be occupying the parents' attention, thereby reducing the infants' access to them. Analyses of the frequency of parental vocalization indicated that the siblings were indeed monopolizing the parents' attention. On the other hand, it is important to note that there was no significant relationship between the level of activity of the infants and the number of parental vocalizations directed either to them (where positive correlations might have been expected) or to their siblings (where negative correlations might have been expected). Several other studies have also reported insignificant correlations between the level of parental and infant interactive activity among one year olds (Lamb, 1976b, 1978b) whereas significant correlations are found with older infants (Lamb, 1976a, 1977a). One-year-olds thus appear to be unresponsive to this simple social cue (Lamb, 1979).

Significantly, furthermore, our data showed that the presence of a parent affected the infant's behavior more than the presence of a sibling did, where as the parent's behavior was affected more by the preschooler's than by the spouse's presence. All these factors appear to rule out the possibility that "second order effects" on the infant's behavior were mediated directly via changes in the behavior of either the parents or the siblings. Instead, the salient cue appears to have been the number of persons available for interaction and the identity of the available interactants.

Previous experimental research has focused exclusively on the effects of a third person's presence on interaction within parent-infant or parent-parent dyads. In the present study, we also examined the effect of a fourth person's presence on interaction within triads. The effects did not even approach significance. Since both a sibling's presence and a parent's presence inhibited infant behavior when dyadic situations were transformed into triadic ones, it seems unlikely that the absence of second-order effects in the transition from a three- to four-person-setting was simply due to the identity of the persons concerned. Instead, these results suggest that the addition of two individuals to a dyadic setting has no greater impact on one-year-olds than the entrance of only one person. Among 18-month-olds, however, the entrance of a fourth person indeed inhibits interaction more than the entrance of a third person (Lamb, 1979). Like the absence of correlation between levels of infant and parent activity (see above), these results point to a significant limitation in the sensitivity of young infants to cues provided by the social context. Further exploration of these limitations and their implications might be revealing.

The fact that the siblings' presence affected the infants' behavior less than the parents' presence did is especially interesting in light of the fact that the presence of a strange child affects sibling-infant interaction more than it affects parent-infant interaction (Lamb, 1979). Thus, the entrance of another adult causes an infant to distribute its attention between the adult previously present and the new interactant (i. e., it now interacts less with each adult than before) while the amount of interaction with child interactants is less affected. An analagous distribution of attention occurs when another child rather than another adult enters (cf. Lamb, 1979) : The subject interacts less with the child interactant than before, but interaction with the adults present is hardly affected. These results seem consistent with Harlow's (Harlow & Harlow, 1965 ; Suomi & Harlow, 1978) argument concerning the relative independence of the peer- and adult-infant interactive systems. Further research on developmental changes in the extent to which the systems appear independent of one another would be valuable.

REFERENCE NOTE

1. Hollingshead, A. B. *The two factor index of social position.* Unpublished manuscript (available from the author, Department of Sociology, Yale University, New Haven, CT. 06520), 1957.

REFERENCES

Bronfenbrenner, U. The experimental ecology of education. *Educational Researcher, 5*, 5-15, 1976.

Bronfenbrenner, U. *The Ecology of Human Development.* Cambridge, MA : Harvard University Press, 1979.

Clarke-Stewart, K. A. And daddy makes three : The father's impact on mother and young child. *Child Development, 49*, 466-478, 1978.

Eckerman, C. O., Whatley, J. L., & Kutz, S. L. Growth of social play with peers during the second year of life. *Developmental Psychology, 11*, 42-49, 1975.

Harlow, H. F., & Harlow, M. K. The affectional systems. In A. M. Schrier, H. F. Harlow, & F. Stollnitz (Eds.), *Behavior of Nonhuman Primates* (Vol. 2). New York : Academic, 1965.

Lamb, M. E. Effects of stress and cohort on mother- and father-infant interaction. *Developmental Psychology, 12*, 435-443, 1976 (a).

Lamb, M. E. Twelve-month-olds and their parents : Interactions in a laboratory playroom. *Developmental Psychology,*

12, 237-244, 1976 (b).

Lamb, M. E. The development of mother-infant and father-infant attachments in the second year of life. *Developmental Psychology, 13*, 637-648, 1977.

Lamb, M. E. Father-infant and mother-infant interaction in the first year of life. *Child Development, 48*, 167-181, 1977 (b).

Lamb, M. E. The development of sibling relationships in infancy : A shortterm longitudinal study. *Child Development, 49*, 1189-1196, 1978 (a).

Lamb, M. E. Infant social cognition and "second order" effects. *Infant Behavior and Development, 1*, 1-10, 1978 (b).

Lamb, M. E. The effects of the social context on dyadic social interaction. In M. E. Lamb, S. J. Suomi, & G. R. Stephenson (Eds.), *Social interaction analysis : Methodological issues*. Madison : University of Wisconsin Press, 1979 (a).

Pedersen, F. A., Anderson, B., & Cain, R. L. Parent-infant and husband-wife interactions observed at age 5-months. In F. A. Pedersen (Ed.), *The Father-Infant Relationship : Observational Studies in A Family Context*. New York : Praeger, 1980.

Rosenblatt, P. C. Behavior in public places : Comparison of couples accompanied and unaccompanied by children. *Journal of Marriage and the Family, 36*, 750-755, 1974.

Stephenson, G. R., Smith, D. P. B., & Roberts, T. W. The SSR system : An open format event recording system with computerized transcription. *Behavior Research Methods and Instrumentation, 7*, 497-515, 1975.

Suomi, S. J., & Harlow, H. F. Early experience and social development in rhesus monkeys. In M. E. Lamb (Ed.), *Socio-personality Development*. New York : Holt, Rinehart & Winston, 1978.